

REMARKS/ARGUMENTS

This is a Response to the Office Action mailed September 22, 2006, in which a three (3) month Shortened Statutory Period for Response has been set, due to expire December 22, 2006. Twenty (20) claims, including two (2) independent claims, were paid for in the application. Claims 2, 11 and 12 have been canceled without prejudice. Claims 1, 3, 4, 6-10 and 13 are currently amended. No new matter has been added to the application. No fee for additional claims is due by way of this Amendment. The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090. Claims 1, 3-10 and 13-20 are pending.

Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 2-20 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

The applicant thanks Examiner Angebranndt for clarifying such rejection of the claims in a telephone conversation with Ronald Stern, Reg. No. 59, 705, on December 18, 2006. In particular, the enablement rejections of the antireflection layers and of the concavo/convex patterns were discussed with Examiner Angebranndt.

The Examiner confirmed that the amendment to the claims as set forth in the Office Action mailed on July 13, 2006, sufficiently addressed the enablement rejection of an antireflection film. In particular, Examiner Angebranndt confirmed that the recitation of an inorganic antireflection film throughout the claims overcomes the enablement rejection of the antireflection film.

The enablement rejection of the concavo/convex patterns was also discussed with the Examiner Angebranndt. The Examiner suggested rewriting claim 2 using the language of claim 12 to recite “a concavo-convex pattern is formed on the second light transmittable substrate” and thereby overcome the rejection under 35 U.S.C. § 112, first paragraph. The Examiner further suggested that amending claim 1 to include the limitations of claims 2 and 12 would be beneficial in overcoming the 103 rejections set forth in the instant Office Action, as discussed below.

The applicant thanks the Examiner for indicating the allowable subject matter and for confirming the status of the enablement rejection of the antireflection film. As suggested by the Examiner, the applicant has amended independent claim 1 to include the limitations of claims 2 and 12 and to recite “a concavo-convex pattern is formed on the second light transmittable substrate.”

Thus, amended independent claim 1 complies with the enablement requirement and is believed to be allowable, as are claims 3-10, which depend therefrom.

Amended independent claim 13 has been amended to recite “a concavo-convex pattern is formed on the second light transmittable substrate” and “a first inorganic antireflection film.” The allowability of amended independent claim 13 is apparent based on the above discussion. Thus, amended claim 13 overcomes the rejection under 35 U.S.C. § 112, first paragraph and is thus allowable as are claims 14-20, which depend therefrom.

Rejections Under 35 U.S.C. § 103

Claim 1 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Takizawa et al., JP2001-026215 (hereinafter “Takizawa”) in view of Japanese Patent No. JP 01-040878 (hereinafter “878 patent”).

According to one embodiment, a holographic recording carrier includes a holographic recording layer sandwiched between light transmittable substrates. A first inorganic antireflection layer and a second inorganic antireflection layer, having different optical characteristics, are formed on respective outer surfaces of the light transmittable substrates. A concavo-convex pattern is formed on a surface of one of the light transmittable substrates for positioning the object and reference beams, and detecting the address of a region in which data is recorded or from which data is reproduced. The concavo-convex pattern may be positioned opposite the incidence direction of the object and reference beams or on the incidence side of the object and reference beams. The concavo-convex pattern may be covered by one of the first or second inorganic antireflection layers.

Amended claim 1 recites, *inter alia*, “optical characteristics of the first inorganic antireflection film and those of the second inorganic antireflection film being different from each

other...and a concavo-convex pattern is formed on the second light transmittable substrate and covered by the second inorganic antireflection film.” (Emphasis added.)

Takizawa teaches a hologram memory 1 having two transparent substrates 3, 4 sandwiching a recording layer 2 therebetween. Antireflection layers 5, 7 are formed on respective surfaces of the transparent substrate 3 while antireflection layers 6, 8 are formed on respective sides of transparent substrate 4. Takizawa teaches that the antireflection layer 7, 8 are both formed from SiO_x and the antireflection layers 5, 6 are formed from resin (Machine translation of Takizawa, paragraph 10). Takizawa further teaches that each of the antireflection layers 5-8 may be formed by laminating a plurality of layers having different refractive indexes (Machine translation of Takizawa, paragraph 17). Thus, Takizawa does not disclose, teach or suggest that the antireflection layers 7, 8 are of different optical characteristics, as disclosed in amended claim 1. Takizawa does not further disclose, teach or suggest a concavo-convex pattern, as also recited in amended claim 1.

The ‘878 patent does not cure the deficiencies of Takizawa. In particular, the ‘878 patent does not disclose, teach or suggest antireflection layers having different optical characteristics or a holographic recording carrier having a concavo-convex pattern, as recited in amended claim 1. Instead, the ‘878 patent teaches having an antireflection layer on a surface of a recording carrier and that the antireflection layer may be formed from multiple layers in order to obtain a desired refractive index.

Thus, Takizawa in view of the ‘878 patent does not disclose, teach or suggest all the limitations of independent claim 1. Consequently, amended independently claim 1 is allowable.

Claims 1-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Furuya et al., JP2002-063733 (hereinafter “Furuya”) in view of Yoshinaga et al. Japanese Patent No. JP 01-231082 (hereinafter “Yoshinaga”), JP 01-040878 (hereinafter “‘878 patent”) and Clube et al. U.S. Patent. No. 6,329,104 (hereinafter “Clube”).

As discussed above, amended claim 1 recites, *inter alia*, “optical characteristics of the first inorganic antireflection film and those of the second inorganic antireflection film being different from each other...and a concavo-convex pattern is formed on the second light

transmittable substrate and covered by the second inorganic antireflection film.” (Emphasis added.)

Furuya teaches a holographic recording medium having a substrate 1 with markers 3 formed thereon. The markers 3 serve to allow for the detection of an address of a region in which data is being recorded or from which data is being reproduced. The address of the region in which the data is being recorded or reproduced is detected by focusing a spot of a laser 202 onto the markers 3 and reading the position information in a position transducer 206. A laser 207 is used for recording and playback. Furuya does not disclose, teach or suggest having inorganic antireflection films covering the markers 3 or even the substrate 1. Thus, Furuya does not disclose, teach or suggest having optical characteristics of a first inorganic antireflection film and those of a second inorganic antireflection film being different from each other, as recited in amended claim 1.

Yoshinaga does not cure the deficiencies of Furuya. In particular, Yoshinaga does not disclose, teach or suggest having optical characteristics of a first inorganic antireflection film and those of a second inorganic antireflection film being different from each other or a concavo-convex pattern formed on a second light transmittable substrate and covered by the second inorganic antireflection film, as recited in amended claim 1. Instead, Yoshinaga teaches a photosensitive film for hologram use having a photosensitive film layer 3 held between respective glass substrates 1 with an index matching liquid 2 interposed between respective glass substrates 1 and the photosensitive film layer 3. Antireflection films 4 are formed on both of the glass substrates 1.

The ‘878 patent fails to cure the deficiencies of both Furuya and Yoshinaga. In particular, the ‘878 patent does not disclose, teach or suggest antireflection layers having different optical characteristics or even a holographic recording carrier having a concavo-convex pattern, as recited in amended claim 1. Instead, as discussed above, the ‘878 patent teaches having an antireflection layer on a surface of a recording carrier and that the antireflection layer may be formed from multiple layers in order to obtain a desired refractive index.

Clube fails to cure the deficiencies of Furuya, Yoshinaga and the ‘878 patent. In particular, Clube does not disclose, teach or suggest antireflection layers having different optical

characteristics or even a holographic recording carrier having a concavo-convex pattern, as recited in amended claim 1. Instead, Clube teaches a method for aligning holographic microlithography elements. The method includes non-holographically recording alignment marks in a holographic recording layer and reading the alignment marks by illuminating the recording layer with a frequency of illumination light which the recording layer is not sensitive to.

The Office Action contends that the teaching of the antireflection films 4 being formed on both sides of the glass substrates 1 (Yoshinaga) and the teaching of forming the antireflection film from multiple layers to obtain the desired refractive index ('878 patent) may be combined. The Office Action attempts to suggest that such combination would lead to a teaching of having antireflection layers on both sides of a holographic recording carrier where one of the antireflection layers is a multilayer antireflection layer having a reflection coefficient different than the other antireflection layer.

Applicant respectfully asserts, as kindly suggested by Examiner Angebranndt during the telephone discussion, that there is no motivation to combine the teachings of Yoshinaga and the '878 patent since a concavo/convex pattern is not present in the holographic recording mediums of both Yoshinaga and the '878 patent. The desirability of having two antireflection layers of different optical characteristics arises when the concavo/convex pattern is present on at least one of the substrates of the holographic recording medium. If the concavo-convex pattern is present on at least one of the substrates and the reflective coefficients of the two antireflection films are the same, it is difficult to position an object beam and/or a reference beam, or detect the region in which data is being recorded or from which data is being reproduced. Thus, one may advantageously tune the object beam and/or the reference beam more effectively if there are different reflective coefficients for the antireflection layers.

It is desirable to have the same optical characteristics for each of the antireflection layers when no concavo-convex pattern is present on at least one of the substrates, as in both Yoshinaga and the '878 patent. Consequently, since the advantage to having antireflection films with different optical characteristics may not be appreciated unless a concavo/convex pattern is present, there can be no motivation to combine the teachings of Yoshinaga and the '878 patent.

Thus, neither Furuya, Yoshinaga, the '878 patent nor Clube, alone or in combination, disclose, teach or suggest all the limitations of amended independent claim 1. Consequently, amended claim 1 is believed to be allowable as are claims 3-10, which depend therefrom.

Although the language of amended independent claim 13 is not identical to that of amended independent claim 1, the allowability of claim 13 will be apparent in light of the above discussion. Thus, claim 13 is believed to be allowable as are claims 14-20, which depend therefrom.

Conclusion

Applicant thanks the Examiner for indicating the allowable subject matter of claims 1, 2 and 12. Overall, the cited references do not singly, or in any motivated combination, teach or suggest the claimed features of the embodiments recited in independent claims 1 and 13, and thus such claims are allowable. Because the remaining claims depend from the allowable independent claims, and also because they include additional limitations, such claims are likewise allowable. If the undersigned attorney has overlooked a relevant teaching in any of the references, the Examiner is requested to point out specifically where such teaching may be found.

In light of the above amendments and remarks, Applicant respectfully submits that all pending claims are allowable. Applicant, therefore, respectfully requests that the Examiner reconsider this application and timely allow all pending claims. Examiner Angebrannndt is encouraged to contact Mr. Carlson by telephone to discuss the above and any other distinctions between the claims and the applied references, if desired. If the Examiner notes any informalities in the claims, he is encouraged to contact Mr. Carlson by telephone to expediently correct such informalities.

Respectfully submitted,
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